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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,716	04/26/2007	Alan Massey	3003-1134-1	2577

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YOUNG & THOMPSON
209 Madison Street
Suite 500
Alexandria, VA 22314

EXAMINER

KREINER, MICHAEL B

ART UNIT	PAPER NUMBER
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3644

NOTIFICATION DATE	DELIVERY MODE
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12/16/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Office Action Summary	Application No. 10/590,716	Applicant(s) MASSEY ET AL.	
	Examiner Michael Kreiner	Art Unit 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: amended paragraph 11 from the amendment dated 10/14/09 is objected to because the phrase "is operated to provide a high flow rate of nitrogen-enriched air in which the concentration of nitrogen is relatively low" (last 3 lines) is repeated twice.

Appropriate correction is required.

Claim Objections

Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitations of claim 2 are now presented in claim 1.

Claim 7 is objected to because of the following informalities: there is no antecedent basis for "said substantially the entire amount of nitrogen-enriched air". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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The term " high concentration of nitrogen" in claims 3 and 8 is a relative term which renders the claim indefinite. The term " high concentration of nitrogen" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term " low mass flow rate" in claims 3 and 8 is a relative term which renders the claim indefinite. The term " low mass flow rate " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The term " high mass flow rate" in claim 8 is a relative term which renders the claim indefinite. The term " high mass flow rate" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what pressure difference and design threshold are being claimed. As such, the broadest reasonable interpretation is any possible design threshold designed to achieve any possible pressure difference.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 6-10 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 6,547,188 to Schmutz *et al.* ("Schmutz").

Regarding claim 1, Schmutz teaches an aircraft fuel tank system comprising: at least one aircraft fuel tank 12; an air separation means 4 for producing nitrogen-enriched air, and control means 18 operable to control said air separation means to supply nitrogen-enriched air into said at least one aircraft fuel tank during cruise conditions and to supply nitrogen-enriched air at a higher flow rate during descent (col. 4 *l.* 55-57), whereby the whole of the mass of gas required to maintain the pressure difference across the walls of the fuel tank below a design threshold is provided by said air separation means (col. 2 *l.* 4-12, where the design threshold for the pressure difference across the walls of the fuel tank is zero because the vent 13 maintains parity between the tank and ambient pressures, and so the whole of the mass of gas required to maintain the pressure difference across the walls of the fuel tank below a design threshold is provided by said air separation means).

Regarding claim 2, Schmutz teaches that said control means controls the air separation means such that the whole of the mass of gas required to maintain said pressure difference is provided by said air separation device (col. 3 *l.* 64 to col. 4 *l.* 4, col. 4 *l.* 47-49).

Regarding claim 3, Schmutz teaches that said air separation means in use provides nitrogen-enriched air having a high concentration of nitrogen at low mass flow rates, and a low concentration of nitrogen being lower at higher mass flow rates (Abstract).

Regarding claims 4, 9, and 10, Schmutz teaches means for distributing the nitrogen-enriched air at a number of spaced locations in said at least one aircraft fuel tank, thereby in use

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to reduce variations in concentration of nitrogen within said tank (conduit 10 provides the nitrogen-enriched air into the ullage of the fuel tank, where it is distributed evenly throughout spaced locations in the ullage of the tank, col. 4 l. 5-8).

Regarding claims 6 and 7, Schmutz teaches aircraft fuel tank system comprising: at least one aircraft fuel tank 12; means for providing nitrogen-enriched air 4 for delivery into said at least one tank, and means for distributing 10 said nitrogen-enriched air at a number of spaced locations within said at least one tank, wherein said substantially the entire amount of nitrogen-enriched air is drawn from said providing means (col. 4 l. 5-8).

Regarding claim 8, Schmutz teaches a method of inerting at least one aircraft fuel tank which comprises operating an air separation device during cruise conditions to deliver nitrogen-enriched air with a high concentration of nitrogen at a low mass flow rate into said aircraft fuel tank, and operating said air separation device during descent conditions to deliver nitrogen-enriched air with a lower concentration of nitrogen and at a high mass flow rate (Abstract), whereby the air-separation device provides the whole of the mass of gas required to maintain the pressure difference across the walls of the or each fuel tank below a design threshold (col. 3 l. 64 to col. 4 l. 8, where the design threshold for the pressure difference across the walls of the fuel tank is zero because the vent 13 maintains parity between the tank and ambient pressures, and so the whole of the mass of gas required to maintain the pressure difference across the walls of the fuel tank below a design threshold is provided by said air separation means).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmutz as applied to claims 1-4 above, in view of Applicant's admitted prior art.

Schmutz teaches that the air separation means includes parallel membranes (col. 3 l. 14-20). Schmutz fails to teach that the membranes are of a hollow fiber type. Applicant admits that it is known to separate air to make nitrogen enriched air using hollow fiber membranes (Applicant's Specification, p. 1 l. 14-18). It would have been obvious to one of ordinary skill in the art at the time of the invention to use hollow fiber membranes because they are a proven technology that efficiently creates nitrogen-enriched air.

Response to Arguments

Applicant's arguments filed 10/14/09 have been fully considered but they are not persuasive.

Applicant argues that with the present invention there is no venting from the fuel tank to ambient air (p. 8 ¶3). Applicant's arguments are not commensurate with the scope of the claims, as Applicant has not claimed that there is no inward venting for the fuel tank. Applicant concedes that "it would in theory be possible to equalize the pressure difference across the walls of the fuel tank simply [by] allowing venting of ambient atmosphere into the tank" (p. 8 ¶3). Applicant has not overcome the outstanding 112 rejections by means of this argument.

Applicant argues on pages 10-11 that Schmutz is dissimilar to the present invention because Schmutz permits venting of ambient air to the fuel tank. As stated above, Applicant's arguments are not commensurate with the scope of the claims, as Applicant has not claimed a

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fuel tank with no vent to ambient atmosphere. The claim recitation of p. 11 ¶2 does not rule out the use of a vent to ambient atmosphere because the pressure differential and design threshold have not been clearly set forth in a manner that would exclude the use of a vent. Applicant's assertion that a vent allows equalization of pressure across the walls of the tank (p. 8 ¶3) confirms that, for such a vented system, the pressure difference is zero, and so no mass is required to maintain the pressure difference.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. "Fuel Tank Flammability Minimization" outline item 7(2)(b) "For example, installation of an inerting system may require the fuel tank vent system to be closed to outside atmosphere in order to maintain a slightly positive pressure and maintain the effectiveness of the inerting system."

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kreiner whose telephone number is (571)270-5379. The examiner can normally be reached on Monday-Friday 9am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Timothy D. Collins/
Primary Examiner, Art Unit 3643

/M. K./
Examiner, Art Unit 3644